

REMARKS/ARGUMENTS

Applicants wish to thank Examiner Pezzuto for the helpful and courteous discussion she had with Applicants' U.S. representatives on March 30, 2004.

The present invention involves the use of copolymers as thickeners for aqueous dispersions. The copolymers are comprised of 3 (3-component) or 4 monomers that include N-vinylpyrrolidone, vinyl acetate, monovinyl ester of a carboxylic acid and optionally an ethylenically unsaturated compound. The thickeners are useful in products such as adhesives, paints and other types of coatings. Thickeners provide the viscosity and rheology control sometimes needed by these products for good performance.

Traditional thickeners can suffer from poor performance such that addition levels are so high that the thickeners can impart deleterious properties to the products to which they are added. These poorly performing traditional thickeners typically are made up of only a 2 monomer (2-component) copolymer.

The present invention comprising at least a 3-component copolymer gives superior thickening performance over traditional 2-component copolymers by reducing the amount of copolymer required to give equivalent thickening performance. This improved performance is illustrated in the following table.

	No thickener	Present Invention ^a Thickener (3- component copolymer @ 1% addition)	Traditional ^b Thickener (2- component copolymer @ 1% addition)
Sample to be Thickened		Viscosity in mPas at a Shear Rate of 250s ⁻¹ and 23°C	
Acronal V 210	250	2200	400
Luphen D 200 A	55	180	60

a) 60% N-vinylpyrrolidone, 37% vinyl acetate, 3% vinyl versatate

b) 60% N-vinylpyrrolidone, 40% vinyl acetate

The results show that the 3-component copolymer of the present invention gives higher viscosity at equal dosage in the test samples as compared to the traditional 2-component copolymer.

Applicants note that the claims have been amended to make the claims more commensurate in scope with Applicants' demonstration of improved results.

The rejection of Claims 1 and 5 under 35 U.S.C. §103(a) as being unpatentable over Perry (U.S. 3,166,525) is respectfully traversed.

Perry discloses 2-component polymers of N-vinyl-2-pyrrolidone and a vinyl ester. There is no suggestion or teaching in Perry to reasonably motivate one skilled in the art to prepare a 3- or 4-component polymer for use as an aqueous thickening agent. Perry discloses no information that can lead one skilled in the art to reasonably conclude that a 3-component polymer would be more effective as a thickening agent or that such a 3-component polymer would give substantially better performance as a thickening agent than a 2-component polymer.

Overall, the 3-component polymer of the present invention is not suggested by Perry. In addition, the present invention gives superior performance compared a 2-component polymer of the type disclosed in Perry. Therefore, the present invention is not obvious over Perry and Applicants respectfully request that the Examiner withdraw the rejection.

The rejection of Claims 1-8 under 35 U.S.C. §103(a) as being unpatentable over Lederer (U.S. 3,531,451) in view of Fox (U.S. 3,632,542) is respectfully traversed.

Lederer discloses 2-component copolymers of vinylactam and vinyl acetate that are useful as thickeners and Fox discloses 3-component copolymers of ethylene, vinyl chloride and vinyl esters that are useful as paints.

A combination of Fox and Lederer does not lead one skilled in the art to the present invention. Combining a 3-component polymer paint formulation with a 2-component

polymer thickener formulation does not lead one to conclude that a 3-component thickener formulation would be successful. Nor does a combination of Fox and Lederer suggest all the claim limitations of the present invention. Combining the polymer formulations in Fox and Lederer does not give the polymer formulation of the present invention. Teaching a 3-component polymer for paint does not reasonably suggest a 3-component polymer for thickening agents. Fox developed the 3-component polymer formulation to improve the performance of paints not thickeners whereas Lederer did not contemplate a 3-component polymer for use as a thickener.

In addition, no construction of these references lead to the conclusion that a 3-component polymer would give superior results as a thickener compared to a 2-component polymer. Because the present invention is not obvious over Lederer and Fox and because the present invention gives superior performance over the reference copolymers, the rejection is believed to be improper and it is respectfully requested that the Examiner withdraw this rejection.

In light of the amendment and the comments discussed above, Applicants respectfully submit that the present application is now in condition for allowance. Favorable

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reconsideration is respectfully requested. Should anything further be required to place the application in condition for allowance, the Examiner is requested to contact the undersigned by telephone.

Respectfully submitted,

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